

Attorney Docket No. U0186 OS/MINPT
Serial No. 10/631,299
Art Unit: 1742
Applicants' Reply to Office Action July 6, 2005

REMARKS/ARGUMENTS

Amendment to the Claims

By the above Listing of Claims, independent claim 14 is amended in the first "wherein" clause to correct the reference to "step VI)" rather than "step II)".

Withdrawal of the Rejections Under 35 USC §102(b)

Applicants thank the examiner for reconsideration and withdrawal of the rejections for anticipation under 35 USC §102(b) in the office action of December 21, 2004.

Rejections Under 35 USC §103(a) for Obviousness

Claims 1-3, 9-12, 14-16 and 19-25 remain pending in the subject application.

(A) Claims 1-3, 10-12, 14-16 and 19-24 stand rejected as obvious over Domic et al. (US Patent No. 4,028,462).

In this new rejection, the examiner states: "Domic et al. in the embodiment of figure 1 and at col. 3 line 46 to col. 4 line 66 for example, teach a method ... thereby showing all aspects of the above claims except the use of only a single stripping stage". The examiner states further: "although Domic et al. never requires any specific number of stripping stages past stating that more stripping stages (elution stages in Domic et al.) allow for more complete recovery."

(Emphasis added.)

The examiner then cites MPEP 2144.04 II A for the proposition that it is well settled that elimination of an element in an apparatus or step along with the element's or step's function would be a modification obvious to one of ordinary skill in the art. Thereafter, the examiner states: "In the instant case, elimination of all but one of the stripping stage in Domic et al., where lower copper value recovery is acceptable, would have been a modification obvious to one of ordinary skill in the art at the time the invention was made." (Emphasis added.)

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The examiner refers to the embodiment of Figure 1 of the reference and to the text at col. 3, line 46 to col. 4, line 66 which "for example teach a method and apparatus for countercurrent solvent extraction including three counter current reactors contacting at least two stripping stages for extraction of either copper or nickel values (see col. 4 lines 60-64 for example) and where the instantly recited compounds can be employed as the solvent extraction reagents (see col. 4 lines 55-61 for example) thereby showing all aspects of the claims." (Emphasis added)

Applicants again respectfully submit that the examiner's reference to Figure 1 of Domic et al. is incorrect for two reasons: (1) Figure 1, as shown by the arrows for Ac1 and Org, is clearly a co-current flow, that is both the aqueous leach solution and the organic solution are flowing through the system in the same direction; and (2) Figure 1 shows three extraction stages and two stripping stages, instead of the currently claimed one stripping stage. The description of Figure 1 of Domic et al. is contained at col. 2, lines 1-15, under the heading "a. Co-current flow" which clearly states (line 3) that the flow of organic and aqueous fluids is in the same direction. It also clearly states (lines 10-12) that in the Ac2 stripping flow, there are two stripping elution reactors, designated El₁ and El₂. Further, the point of the invention in Domic et al. is to alternate the loading (i.e., extraction) and unloading (i.e., stripping) stages. (See the Abstract and col. 3, line 47, to col. 4, line 8 of Domic et al.) Thus, if the extraction circuit contains three stages, then two strip stages are required in order to accomplish this alternating pattern.

At col. 3, lines 56-64, Domic et al. which states:

"The way to improve this driving force is to discharge partially the organic phase, before EACH EXTRACTION STEP, so the avidity of the organic phase is always maintained in a high level in such a way that its effective charge is greatly improved per cycle.

The present invention relates to a procedure intended to load or unload (partially or fully) the organic phase in an ALTERNATE manner."

(Capitalization in the original.)

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Also contra to applicants' claims, the Example Table of Domic et al. shows two stripping stages for CASES a, b and c and three stripping stages for CASE d, all of which have three extraction stages.

The Examiner's only rationale for the new obviousness rejection is based on a so-called black letter law shown in MPEP 2144.04 II A and *In re Harza*, which simply states that to omit an element is obvious. However, the examiner did not observe the heading of MPEP 2144.04 II A, which is as follows:

"II. ELIMINATION OF A STEP OR AN ELEMENT AND ITS FUNCTION

A. Omission of an Element and Its Function Is Obvious If the Function of the Element Is Not Desired."

(Underlining added)

Applicants' submit that Domic et al. itself clearly states that the second element, that is, the second strip stage, is needed in order to have the required alternate loading and unloading feature of the invention. This is contra to a holding of obviousness under MPEP 1244.04 II A.

On the other hand, the heading of the 2144.04 II B section of the MPEP confirms that the present applicants' omission of the second strip stage is unobvious. The heading of MPEP 2144.04 II B is as follows:

"B. Omission of an Element with Retention of the Element's Function Is an Indicia of Unobviousness."

Thus, Applicants submit that their claimed invention is not obvious over Domic et al.

Applicants again note that Figure 2 of Domic et al. discloses a three stage extraction circuit with counter current flow - but with **two** stripping stages (again labeled El₁ and El₂) instead of one as required in applicant's independent claims 1, 12 and 14. Again, in Domic et al., two stripping

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stages are required with the three extraction stages in order to obtain the objective of Domic et al to alternate the loading and unloading, i.e., extraction and stripping, functions.

Applicants submit further that their invention is not predicated on "the acceptance of a lower copper value recovery". Instead, applicants have surprisingly discovered that a higher copper value recovery can be obtained with the three extraction and one stripping stage configuration than with the existing two extraction and two stripping stage configuration.

Applicants note further that the extraction and stripping stages represented in the Figures of the subject application and of Domic et al. are not just black boxes. They represent chemical reactors. Thus, where and how often the Metal-Rich feed, the stripped organic and/or partially loaded organic solutions come into contact with each other indeed has a significant impact on the resulting transfer of materials from the aqueous phase to the organic phase, complexing of the metal in the organic phase, and the subsequent stripping and electrowinning stages of the metal/copper recovery processes. These reaction parameters are not arithmetically predictable as the examiner suggests by his reference to MPEP 2144.04 VI B and *in re Harza*, 124 USPQ 378. In the present case, Domic et al. strongly teaches that the most efficient process requires that the extraction and stripping steps of the process be alternated, therefore requiring two stripping stages for three extraction stages. Applicants' claimed invention is contra to this teaching and, therefore, is patentable.

For these reasons, Applicants respectfully submit that the examiner has not established a *prima facie* case of obviousness of their claims 1-3, 10-12, 14-16 and 19-24 over Domic et al. and respectfully request withdrawal of this rejection under 35 USC 103(a).

(B) Claims 1-3, 9-12, 14-16 and 19-25 stand rejected for obviousness over Lower (US Patent No. 3,429,694) and Pang (US Patent No. 3,697,400).

The examiner states that both Lower, in the embodiment of Figure 1, and Pang, also in the embodiment of Figure 1, "teach a method and apparatus for counter current solvent extraction of

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copper values comprising at least 3 counter current extraction stages, a wash, or filter stage and a strip stage, thereby showing all aspects of the above claims, except the use of only a single strip stage and three extraction stages." (emphasis added)

Applicants respectfully traverse this rejection, in part, because it is a misstatement of what the Figure 1 embodiments show. The named embodiments each specifically show four extraction stages and four strip stages. Indeed, the text of Lower, in example 1 at col. 7, lines 10-11, and in example 2 at col. 7, lines 59-60, also solely discloses the use of four extraction stages. And, the text of Lower, in example 1 at col. 7, lines 23-24, and in example 2 at col. 7, lines 71-72, also solely discloses the use of four stripping stages.

Pang, in Example 9, at col. 12, lines 30-37 states:

"The number of stages of countercurrent extraction varies with the type of equipment, and other flow sheet details. For conventional type extractors, from 3 to 9 stages normally can be considered as an economical range for either the AMQA-solvent extraction of the copper, or for the strong acid stripping of copper from the copper loaded chelate to form the electrolyte cell feed.

(Underlining added)

Thus, individually, Lower and Pang each teach away from applicants' claimed invention.

Taken together, they suggest more than three extraction stages and no fewer than three stripping stages. Therefore, Lower and Pang distinctly teach away from applicants' claimed invention - demonstrating that it is unobvious.

The unobviousness of applicants' claimed invention is even clearer when one considers that Lower was published in 1969 and Pang in 1971. Thus, more than 30 years passed before the present applicants first discovered the surprising efficiency of the claimed system having three countercurrent extraction stages and only a single strip stage.

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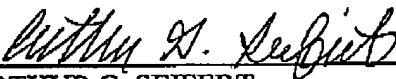
Accordingly, applicants respectfully request withdrawal of the rejection of pending claims 1-3, 9-12, 14-16 and 19-25 stand rejected for obviousness over Lower and Pang under 35 USC 103(a).

There are no further rejections in the subject Office Action. It is believed that the foregoing amendment to the specification and reply are completely responsive under 35 CFR 1.111 and that all grounds of rejection are completely avoided and/or overcome. Applicants therefore respectfully request that a timely Notice of Allowance be issued in this application.

The Examiner is requested to telephone the undersigned attorney if any further questions remain which can be resolved by a telephone interview.

Respectfully submitted,
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(Date)


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